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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/551,130	09/29/2005	Takahiro Kishioka	125473	4076
25944	7590	06/19/2007		
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			EXAMINER HAMILTON, CYNTHIA	
			ART UNIT 1752	PAPER NUMBER
			MAIL DATE 06/19/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/551,130	Applicant(s) KISHIOKA, TAKAHIRO	
	Examiner Cynthia Hamilton	Art Unit 1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/27/2007
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1-4 provides for the use of a resist underlayer coating forming composition in a lithograph process of manufacture of a semiconductor device, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claims 1-11 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966). The claims are written as "A resist underlayer coating forming composition used in a lithographic process of manufacture of a semiconductor

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device...” The examiner is unsure if applicants are still claiming a composition or a process. Because applicants did not write “for use in ...a process...”, the examiner cannot assume this is the intended use for the claimed composition. Applicants wrote “used in” which is not an intention but an actual “having been used “.. The examiner is not sure what applicants intended with this language. Use claims are not patentable under 35 USC 101, so only the compositions claimed have been examined. Because claim 12 has a step of coating it is clearly drawn to a method.. Methods are clearly claimed in instant claims 13-14 as well.

5. Claims 1-14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicants have added to independent claims 1-4 in the last line of each that a compound has a “triazine skeleton”. For support, applicants have state the following in their respons of March 27, 2007:

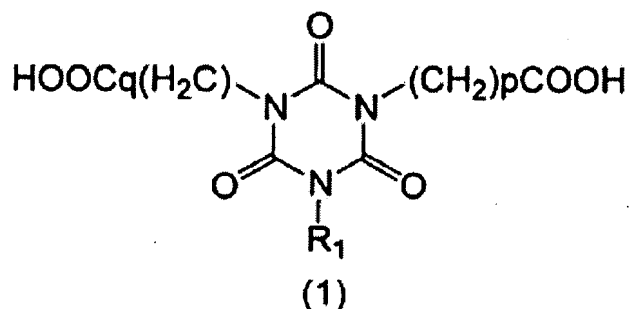
“Claims 1-14 are pending in this application. By this Amendment, claims 1-4 are amended. No new matter is added by these amendments. Specifically, compounds having a triazine skeleton in the amended claims are described, for example, in examples 1, 2 and 3 of the specification, and the polymers in the amended claims are described, for example, in paragraphs [0018]-[0059] of the specification in which it is described that polymers can be produced by using the compounds of formula (1) at page 15, or formula (2) at page 17. “

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The examiner found no explicit support for "triazine skeleton" in any of the original disclosure.

What was found was at page 5 -

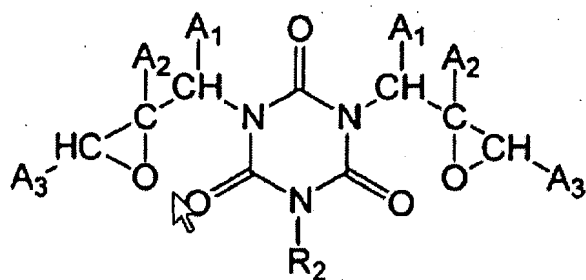
- as an eighth aspect, the underlayer coating forming composition as described in the second aspect, wherein the compound with a molecular weight of 2000 or less having at least two carboxyl groups is a compound of formula (1)



wherein p and q is a number of 1 to 6, R₁ is hydrogen atom, C₁₋₆ alkyl group, C₃₋₆ alkenyl group, benzyl group, phenyl group or -(CH₂)_rCOOH wherein r is a number of 1 to 6;

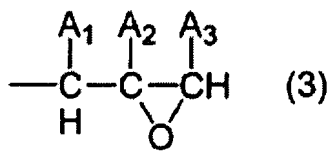
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At page 6



(2)

wherein A_1 , A_2 and A_3 each are hydrogen atom, methyl group or ethyl group, R_2 is hydrogen atom, C_{1-6} alkyl group, C_{3-6} alkenyl group, benzyl group, phenyl group or a group of formula (3)

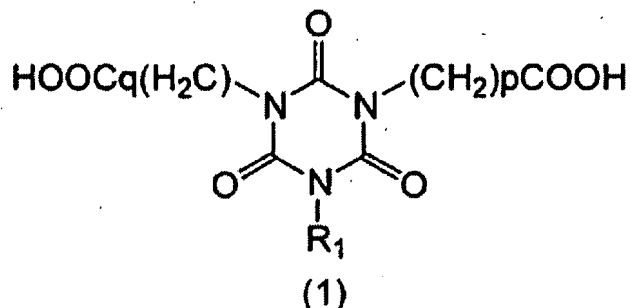


(3)

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In [0052]

[0052] The compound with a molecular weight of 2000 or less having at least two carboxyl groups includes for example isophthalic acid, terephthalic acid, 1,2,4-trimellitic acid, pyromellitic acid, adipic acid, maleic acid, itaconic acid, fumaric acid, butane tetracarboxylic acid and the like. In addition, the compound of formula (1)



may be mentioned. In the formula, p and q is a number of 1 to 6, R₁ is hydrogen atom, C₁₋₆ alkyl group, C₃₋₆ alkenyl group, benzyl group, phenyl group or -(CH₂)_rCOOH wherein r is a number of 1 to 6. R₁ is for example methyl group, ethyl group, isopropyl group, n-butyl group, and 2-propenyl group, etc. Specific examples of the compounds of formula (1) are for example tris(2-carboxyethyl) isocyanuric acid, tris(3-carboxypropyl) isocyanuric acid and the like.

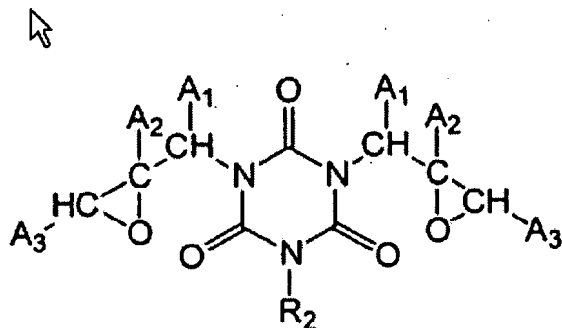
In [0054]

[0054] The compound with a molecular weight of 2000 or less having at least two protected carboxyl groups includes for example terephthalic acid, trimellitic acid, pyromellitic acid, isophthalic acid, tris(2-carboxyethyl) isocyanuric acid, tris(3-

carboxypropyl) isocyanuric acid, adipic acid, maleic acid, itaconic acid, fumaric acid, butane tetracarboxylic acid and the like which are converted with propyl vinyl ether into a form of hemiacetal.

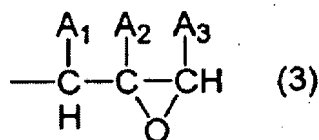
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in [0059]



(2)

may be mentioned. In this formula, wherein A₁, A₂ and A₃ each are hydrogen atom, methyl group or ethyl group, R₂ is hydrogen atom, C₁₋₆ alkyl group, C₃₋₆ alkenyl group, benzyl group, phenyl group or a group of formula (3). R₂ is for example methyl group, ethyl group, isopropyl group, n-butyl group, 2,3-epoxypropyl group and 2-propenyl group, etc.

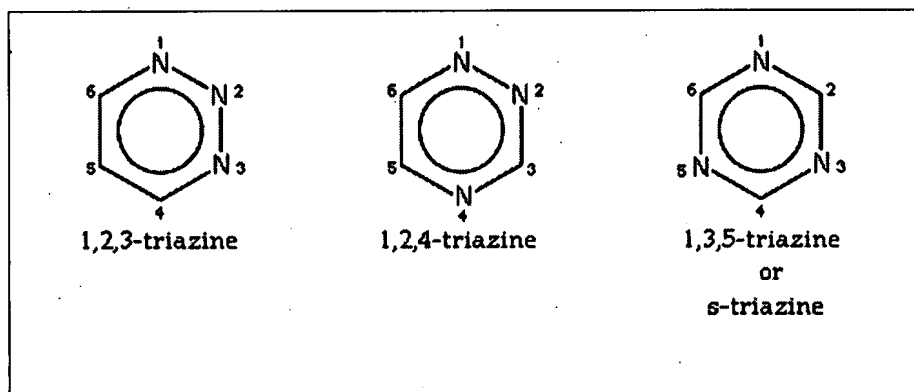


(3)

[0060] Specific examples of the compound formula (2) include for example tris(2,3-epoxypropyl) isocyanurate, monoallyl diglycidyl isocyanurate and the like. These compounds can be used alone or in a combination of two or more compounds.

and in Examples 1,2 and 3 the same isocyanuric acid and isocyanurate compounds as shown above. Thus, only one specie of triazine skeleton is shown by applicants only in their original disclosure Triazines have these basic structures:

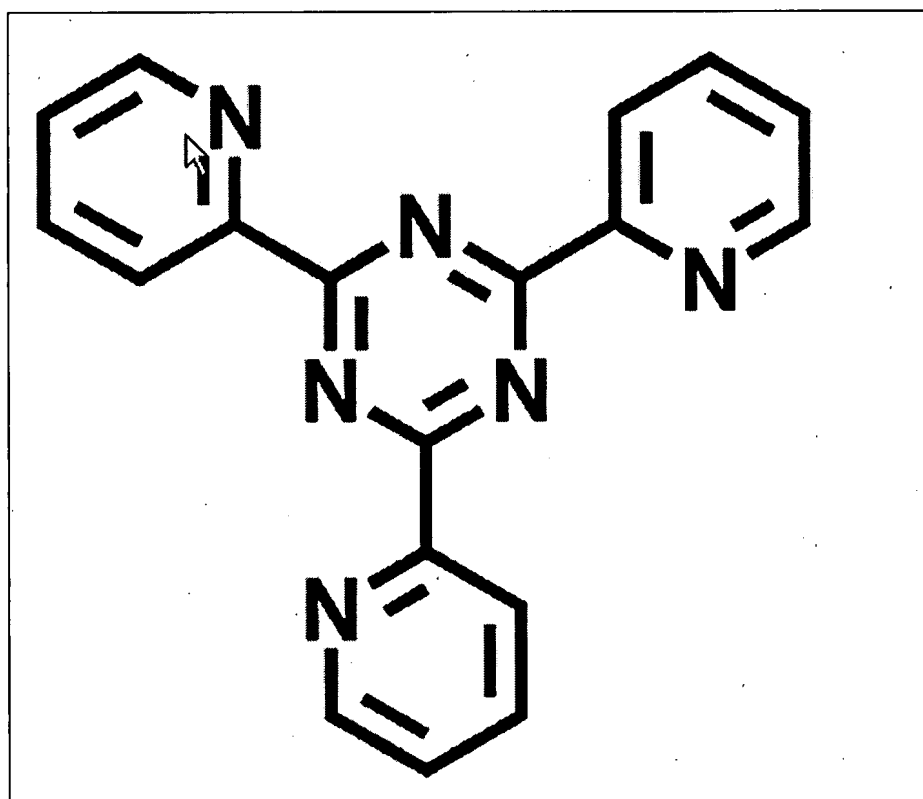
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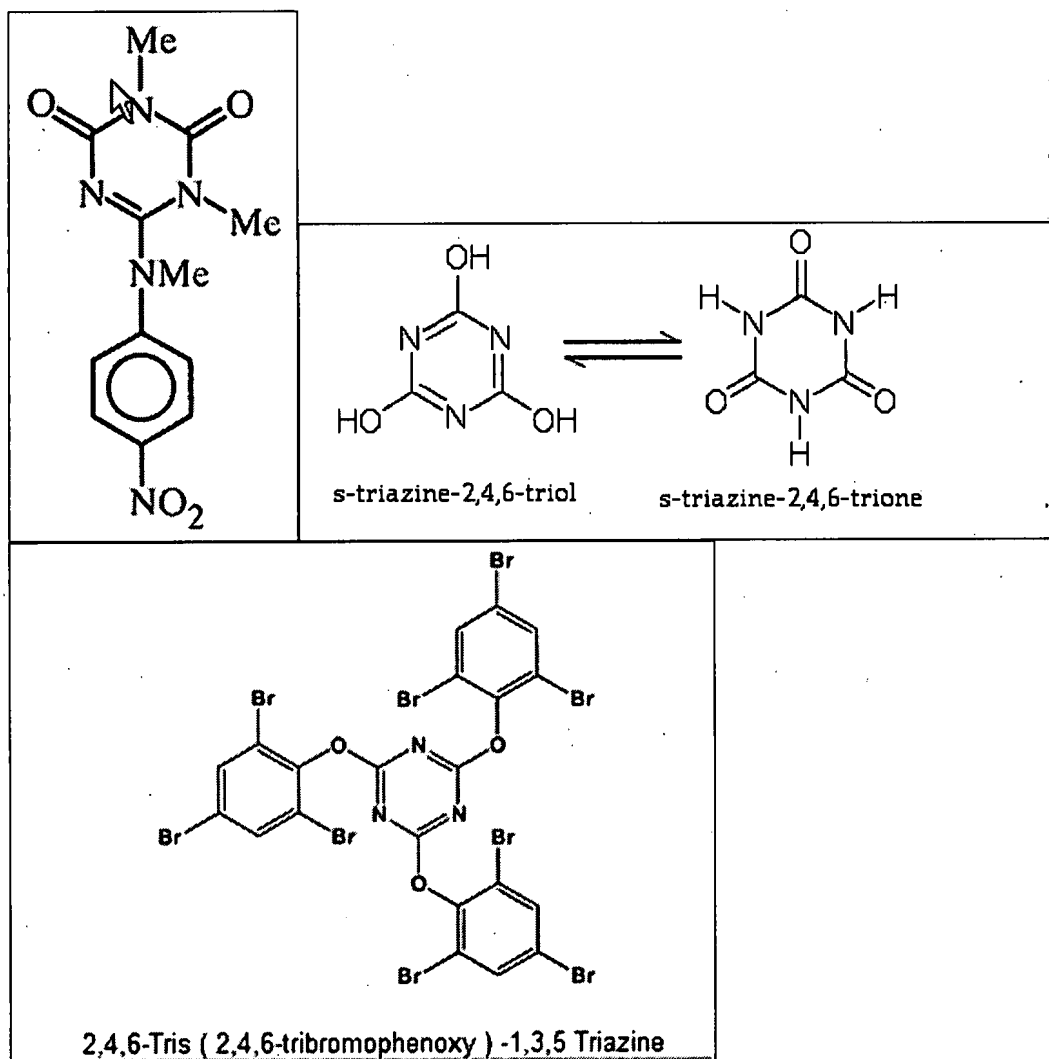
Applicants have shown

only compounds with a 1, 3, 5 triazine, i.e. s-triazine ring structure in their original disclosure.

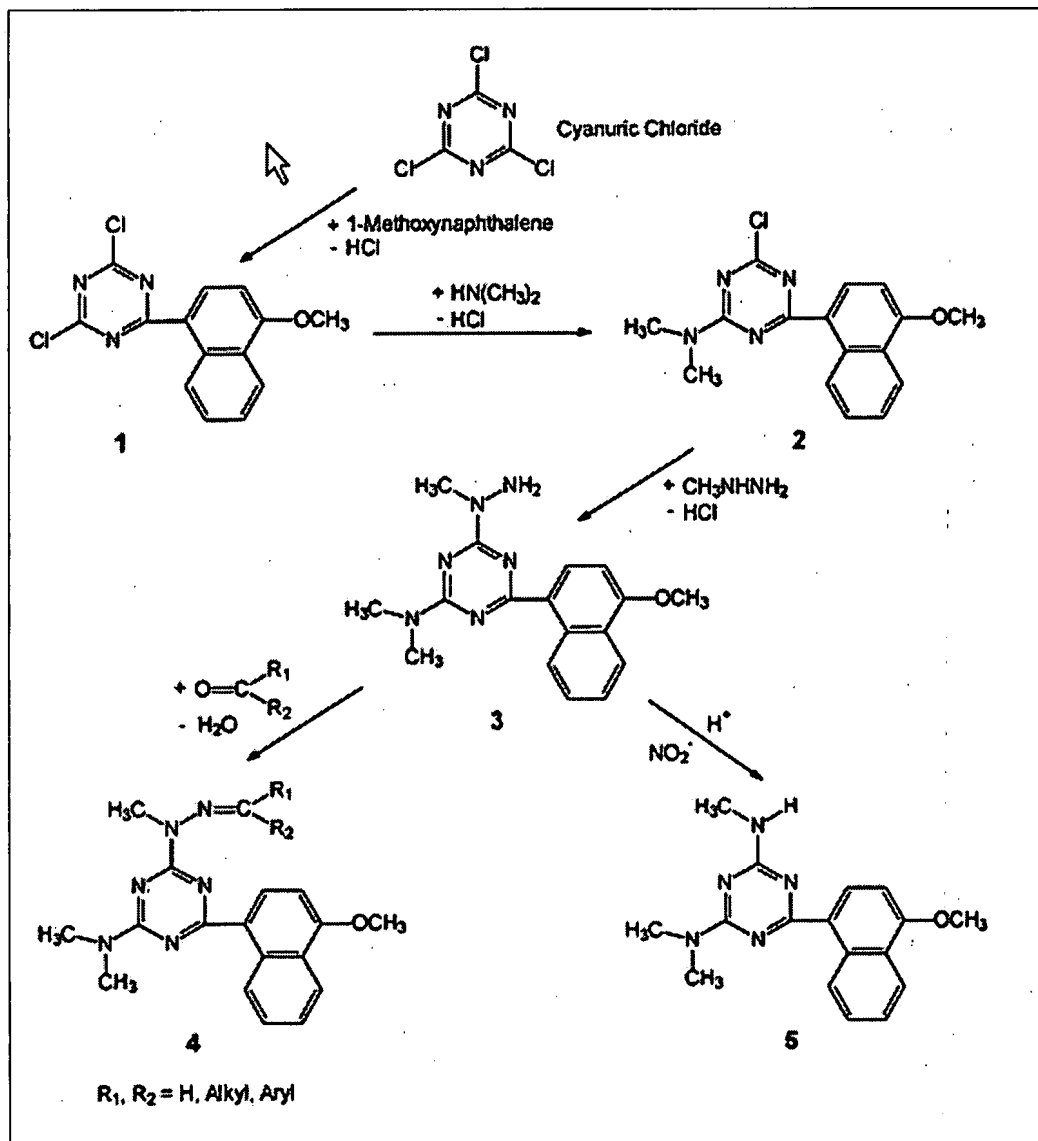
Other s-triazine ring compound examples found in a Google image search using triazine are



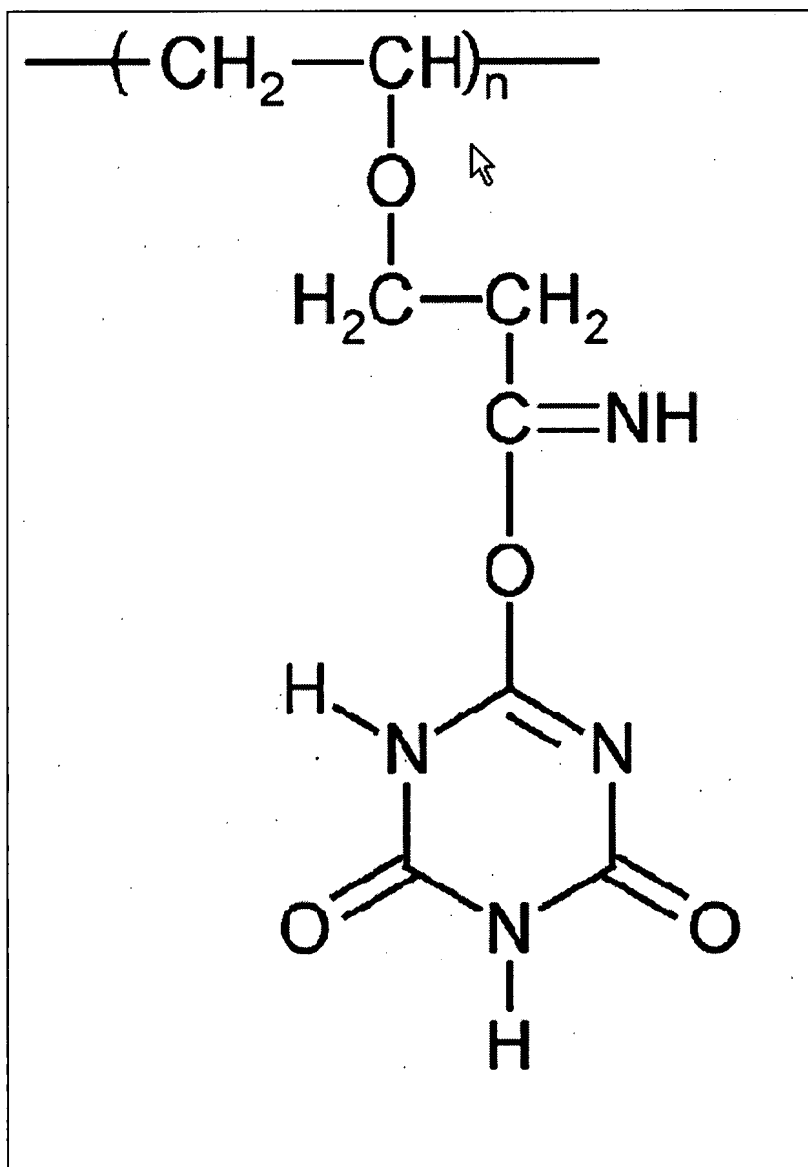
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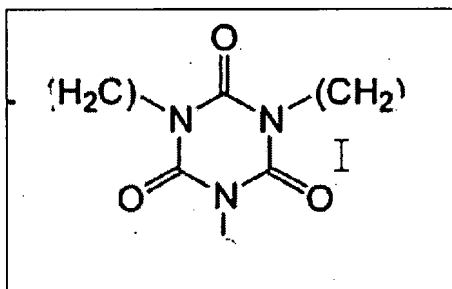
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and



Thus, applicants have failed to show sufficient species in their original disclosure to support the entire genus of “triazine skeleton” as now found in all of the instant claims. Only one isomeric form of triazine ring is given out of three structures. Only the ring of



is found and only epoxy or carboxyl groups are found as end groups in the Markush group of phenolic hydroxy group, carboxyl group, protected carboxy group or anhydride group. The examiner believes there is insufficient written description for the genus “triazine skeleton” in the original disclosure to convey to workers of ordinary skill in the art that at the time of filing such a genus was disclosed. Applicants have failed to disclose a sufficient representative number of speices of the entire species claimed to adequately describe the variety of species part of “triazine skeleton”. With respect to the showing required for support, the examiner suggests applicants see MPEP 2163.05, and subgenus, In re Smith, 458 F.2d 1389, 1395, 173 USPQ 679, 683 (CCPA 1972) (“Whatever may be the viability of an inductive-deductive approach to arriving at a claimed subgenus, it cannot be said that such a subgenus is necessarily described by a genus encompassing it and a species upon which it reads.” (emphasis added)).

6. The examiner agrees that Nemoto et al and Hong et al and JP 10-120939 A have no triazine skeleton fitting the description of newly amended claim 4. Thus, rejections in the last Office action with respect to claim 4 and these references are overcome by amendment.
7. Claims 2 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Lees et al (5,380,804). The formulations of Example 3 Part A of Lees et al anticipate the instant coating compositions of claims 2 and 8. The compositions of Lees et al are inherently able to act as

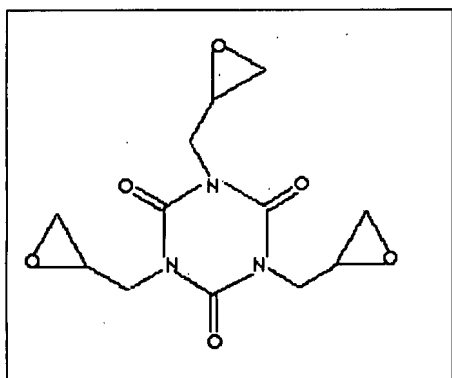
undercoating compositions or to be made into undercoating compositions thus being "forming" capable.

8. Applicant's arguments filed March 27, 2007 have been fully considered but they are not persuasive. Applicants argue that Lees (US 5,380,804) does not teach anti-reflective coatings for lithography comprising triazine skeletons but instead teach powder coatings. Thus, applicants believe the now amended claims "obviate the rejection." The examiner first notes that the claimed invention does not make mention of "anti-reflective" at all, thus arguments to such are not directed to the claimed invention. Second, the rejection is one of anticipation and inherency. The powdered coating of Lees inherently have the ability to be formed into coatings which could be used in the intended methods of use set forth in the instant claims 2 and 8. As "use" claims without process steps are not allowed to be patented under 35 USC 101, then all that is left of claims 2 and 8 are compositions capable of forming coatings for resist underlayers that can be used in a lithographic process of manufacture to form a semiconductor device. Applicants have not pointed out why the coatings of Lees cannot be so used inherently. The powder coating could be solvated then coated. There is nothing in the claim language which excludes powder compositions from the scope claimed. The rejection stands.

9. Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishioka et al (either as US 2004/0110096 A1 or as WO 02/086624 A1 as evidenced by US 2004/0110096 A1). WO 02/086624 A1 has a publication date of October 31, 2002 and the National stage of this document, i.e. US 2004/0110096 A1, has a publication date of June 10, 2004. There is no date applicable under 35 USC 102 (e) with respect to these documents. Thus, the dates of concern are the publication dates alone. Since US 2004/0110096 A1 is the National stage of the

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PCT application of WO 02/086624 A1, US 2004/0110096 A1 is taken as an English translation of WO 02/086624 A1 and is used as such here as to evidence the content of WO 02/086624 A1. All citations are to the content of US 2004/0110096 A1. With respect to instant claims 3 and 9, Kishioka et al teach the instant invention with the exception of a specific working example wherein a triglycidyl isocyanurate compound is mixed with a polymer having either a phenolic hydroxy group or a carboxylic acid group. Kishioka et al teach the use of mixtures of their formula (1) with a resin in [0035]. One example of formula (1) is as described in [0026] as the epoxy derivative with R^1 , R^2 and R^3 being glycidyl. This is the structure as follows:



and is known as triglycidyl isocyanurate in the art. The resins used to mix with the formula (1) compounds are set forth in [0043] in Kishioka et al and are inclusive of polyhydroxystyrene, i.e. polyvinylphenol, polymaleic acid, polyacrylic acid and polymethacrylic acid among others. With respect to instant claims 3 and 9, the mixing of any one of the formula (1) compounds with any of the resins given would have been prima facie obvious to form the compositions of Kishioka et al to be used for forming anti-reflective coatings for use in a lithographic process to obtain an antireflective layer with high reflection reducing effect and does not cause intermixing with a resist layer to be used as set forth by Kishioka et al in their Abstract.

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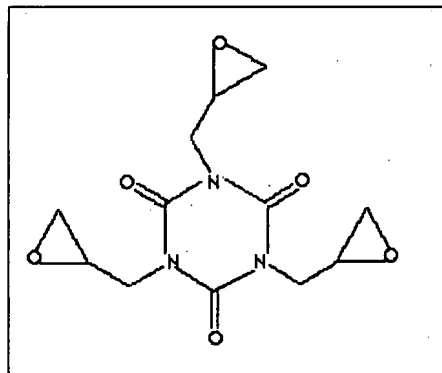
10. Applicant's arguments filed March 27, 2007 have been fully considered but they are not persuasive. Applicants argue that the rejection made in view of Claims 3 and 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Kishioka et al (either as US 2004/0110096 A1 or as WO 02/086624.A1 as evidenced by US 2004/0110096 A1) is not prima facie obvious to workers of ordinary skill in the art. The examiner believes it is. The rejection stands for reasons of record.

11. Claims 3 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by DERWENT-ACC-NO: 1986-290577. With respect to instant claims 3 and 9, The composition of novolak resin and triglycidyl isocyanurate set forth by DERWENT-ACC-NO: 1986-290577 anticipates the instant composition and has the inherent capability to be an undercoating.

12. Applicant's arguments filed March 27, 2007 have been fully considered but they are not persuasive. Applicants argue because the intended use of the compositions of DERWENT-ACC-NO: 1986-290577 are different than the intended use of the instant compositions that this is sufficient to remove the anticipation by DERWENT-ACC-NO: 1986-290577. The examiner believes it is not. The compositions of DERWENT-ACC-NO: 1986-290577 have all of the same compounds and thus are inherently useful in the manner required by applicants. Further there is no requirement for "anti-reflective" in the instant claims.

13. Claims 3 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Hitachi (JP 58-107312 A and attached English abstract. With respect to instant claims 3 and 9, The composition of novolak resin and triglycidyl isocyanurate set forth by Hitachi anticipates the instant composition and has the inherent capability to be an undercoating.

14. Applicant's arguments filed March 27, 2007 have been fully considered but they are not persuasive. Applicants argue that Hitachi (JP 58-107312 A and attached English abstract do not teach "anti-reflective coating". Applicants do not claim "anti-reflective coating". Hitachi (JP 58-107312 A and attached English abstract clearly show the triglycidyl isocyanurate which is



contains the "triazine skeleton" as shown here: Thus the rejection stands for reasons of record.

15. Claims 3 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Harade et al (EP 1 203 792 A1) as set forth in Comparative Example B4. See particularly Table 14, page 38, page 36 [0200].

16. Applicant's arguments filed March 27, 2007 have been fully considered but they are not persuasive. Applicants argue that EP 1203792 does not teach or suggest anti-reflective coatings. Applicants do not claim anti-reflective coatings. Further, the issue is anticipation with respect to EP 1203792 so suggestion is not an issue. Inherency is the issue. Mere recitation of newly discovered function or property, inherently possessed by things in prior art, does not cause claim drawn to those things to distinguish over prior art; Patent Office can require applicant to prove that subject matter shown to be in prior art does not possess characteristic relied on where it has reason to believe that functional limitation asserted to be critical for establishing novelty in claimed subject matter may be inherent characteristic of prior art; this burden of proof is

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applicable to product and process claims reasonably considered as possessing allegedly inherent characteristics. In re Best, Bolton and Shaw (CCPA) 195 USPQ 430. The rejection stands.

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

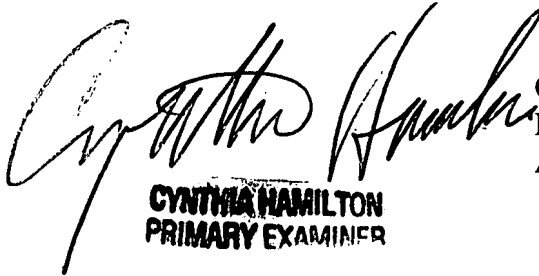
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Hamilton whose telephone number is 571-272-1331. The examiner can normally be reached on Monday through Friday 9:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly can be reached on (571) 272-0729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Cynthia Hamilton
Primary Examiner
Art Unit 1752

CYNTHIA HAMILTON
PRIMARY EXAMINER

June 17, 2007